CLAIMS:

1. A bone plate system for maintaining at least a plurality of bone structures in a desired arrangement comprising:

a plate defining at least two bores and a recess at each bore;

at least two bone screws, each bone screw being extendable through one of the bores for securement to a bone structure;

a screw lock for each bone screw and corresponding bore of the plate, each screw lock being operable at the recess of the corresponding bore such that each screw lock may be shifted between an unlocked position which allows the corresponding bone screw to be extended through the corresponding bore of plate and secured into a bone structure and a locked position wherein the screw lock engages the bone screw to prevent relative movement between the screw lock and the bone screw.

2. The bone plate system of Claim 1 wherein at least one bone screw includes a generally longitudinal axis and the corresponding screw lock prevents linear movement of the bone screw along the longitudinal axis of the at least one bone screw and angular movement of the longitudinal axis of the at least one bone screw relative to the plate when in the locked position.

3. The bone plate system of Claim 2 wherein the longitudinal axis of the at least one bone screw can be set to a predetermined angle relative to the plate when the corresponding screw lock is in the unlocked position and maintained at the predetermined angle when the corresponding screw lock is shifted to the locked position.

4. The bone plate system of Claim 2 wherein each screw lock engages opposing sides of the corresponding bone screw when in the locked position to prevent linear movement of the bone screw along the longitudinal axis of the at least one bone screw and angular movement of the longitudinal axis of the at least one bone screw relative to the plate when in the locked position.

5. The bone plate system of Claim 4 wherein each screw lock and corresponding bone screw include complimentary profiled surfaces for engagement when the screw lock is in the locked position to prevent linear movement of the bone screw along the longitudinal axis of the at least one bone screw and angular movement of the longitudinal axis of the at least one bone screw relative to the plate when in the locked position.

6. The bone plate system of Claim 5 wherein each bone screw includes at least a shank portion and a head portion and each screw lock engages opposing sides of the head portion of the corresponding bone screw when in the locked position and wherein the complimentary profiled surfaces of each screw lock and corresponding bone screw include at least arcuate surface portions for engagement to prevent linear movement of the bone screw along the longitudinal axis of the at least one bone screw and angular movement of the longitudinal axis of the at least one bone screw relative to the plate when in the locked position.

7. The bone plate system of Claim 4 wherein each screw lock substantially encircles the longitudinal axis of the corresponding bone screw.

8. The bone plate system of Claim 7 wherein each screw lock includes a c-shaped collar with opposing ends and the opposing ends move toward one another

when the screw lock is being shifted to the locked position and away from one another when the screw lock is being shifted to the unlocked position.

9. The bone plate system of Claim 8 wherein each recess has an annular shape and each c-shaped collar operates in each corresponding annular recess when shifting between the locked position and the unlocked position.

10. The bone plate system of claim 8 wherein each collar is rotated to shift between the locked position and unlocked position.

11. The bone plate system of claim 10 wherein either each collar or plate has a cam surface that forms a camming engagement with the other of the collar or plate at the corresponding recess of the bore, the camming engagement shifts the screw lock between the locked position and unlocked position upon rotation of the collar.

12. The bone plate system of Claim 11 further comprising at least one stop for each collar to limit the rotation of the collars to a predetermined amount.

13. The bone plate system of claim 1 wherein the screw head has lateral sides and rotation of the screw lock compresses the screw lock against the lateral sides of the screw head to secure the screw relative to the screw lock.

14. The bone plate system of claim 13 wherein the rotation of the screw lock compresses the screw lock against substantially all of the lateral sides of the screw head.

15. The plate system of claim 1 wherein the screw lock has a first portion with a first dimension and has a second portion with a second dimension smaller than the first dimension.

16. The plate system of claim 15 wherein each screw lock has at least one cam surface between the first portion with the first dimension and the second portion with the second dimension.

17. The plate system of claim 16 wherein the at least one cam surface is axially located on the screw lock and rotation of the screw lock engages the cam surfaces with the plate at the respective bore to compress the screw lock against the screw head.

18. The plate system of claim 17 wherein the screw lock translates axially upon rotation to compress the screw lock against the screw head.

19. The bone plate system of claim 1 wherein screw lock compresses around the screw in a direction transverse to the central longitudinal axis of the screw when shifting to the locked position.

20. The plate system of claim 1 wherein the screw lock may expand elastically to permit the screw to be inserted therein, and the screw lock may contract elastically once the screw is disposed therein.

21. The plate system of claim 1 wherein at least one of the bores has a major and major axis, the recess has a major and minor axis, the screw lock is disposed within

the bore and recess, and the screw lock may permit compression of adjacent secured bones when secured against a bone screw within the plate.

22. The bone plate system of claim 1 wherein each screw lock is rotatable independent of the rotation of its respective screw.

23. The bone plate system of claim 21 further comprising a tool that rotates both the screw and the corresponding screw lock.

24. A bone screw lock system comprising:

a construct defining a bore and a recess at the bore;

a bone screw being extendable through the bore for securement to a bone structure;

a screw lock for the bone screw being operable at the recess of the bore such that the screw lock may be shifted between an unlocked position which allows the bone screw to be extended through the bore and secured into a bone structure and a locked position wherein the screw lock engages the bone screw to prevent relative movement between the screw lock and the bone screw.

25. The bone screw lock system of Claim 24 wherein the bone screw includes a generally longitudinal axis and the screw lock prevents linear movement of the bone screw along the longitudinal axis of the bone screw and angular movement of the longitudinal axis of the bone screw relative to the construct when in the locked position.

26. The bone screw lock system of Claim 25 wherein the longitudinal axis of the bone screw can be set to a predetermined angle relative to the construct when the screw lock is in the unlocked position and maintained at the predetermined angle when the screw lock is shifted to the locked position to prevent linear movement of the bone screw along the longitudinal axis of the bone screw and angular movement of the longitudinal axis of the bone screw relative to the construct when in the locked position.

27. The bone screw lock system of Claim 25 wherein the screw lock engages opposing sides of the bone screw when in the locked position to prevent linear movement of the bone screw along the longitudinal axis of the bone screw and angular movement of the longitudinal axis of the bone screw relative to the construct when in the locked position.

28. The bone screw lock system of Claim 27 wherein the screw lock and the bone screw include complimentary profiled surfaces for engagement when the screw lock is in the locked position to prevent linear movement of the bone screw along the longitudinal axis of the bone screw and angular movement of the longitudinal axis of the bone screw relative to the construct when in the locked position.

29. The bone screw lock system of Claim 28 wherein the bone screw includes at least a shank portion and a head portion and the screw lock engages opposing sides of the head portion of the bone screw when in the locked position and wherein the complimentary profiled surfaces of the screw lock and the bone screw include at least arcuate surface portions for engagement to prevent linear movement of the bone screw along the longitudinal axis of the bone screw and angular movement of the longitudinal axis of the bone screw relative to the member when in the locked position.

30. The bone screw lock system of Claim 27 wherein the screw lock substantially encircles the longitudinal axis of the bone screw.

31. The bone screw lock system of Claim 30 wherein the screw lock includes a c-shaped collar with opposing ends and the opposing ends move toward one another when the screw lock is being shifted to the locked position and away from one another when the screw lock is being shifted to the unlocked position.

32. The bone screw lock system of Claim 31 wherein each recess has an annular shape and each c-shaped collar operates in each corresponding annular recess when shifting between the locked position and the unlocked position.

33. The bone screw lock system of claim 31 wherein each collar is rotated to shift between the locked position and unlocked position.

34. The bone screw lock system of claim 33 wherein either of each collar or plate has a cam surface that forms a camming engagement with the other of the collar or plate at the corresponding recess of the bore, the camming engagement shifts the screw lock between the locked position and the unlocked position upon rotation of the collar.

35. The bone screw lock system of Claim 34 further comprising at least one stop to limit the rotation of the collar to a predetermined amount.

36. A bone plate system for securing a plurality of bones in a desired alignment comprising:

a plate including a plurality of bores aligned with respective bones;

a bone screw securable within each bore wherein at least portion of the screws is polyaxial, each screw having a head, a shank, and a central longitudinal axis;

and a screw lock for locking each polyaxial screw in a desired orientation.

37. The bone plate system of claim 36 wherein the system allows the plurality of bones to compress after implantation.

38. The bone plate system of claim 36 wherein at least a portion of the bores permits a secured screw to move along a generally vertical axis towards a second secured screw.

39. The bone plate system of claim 36 wherein each screw lock is pre-set in the bone plate.

40. The bone plate system of claim 36 wherein each screw lock is a collar located at least partially within a bore.

41. The bone plate system of claim 40 wherein each collar locks around a periphery of a head of the screw.

42. The bone plate system of claim 41 wherein each collar may compress around the head of the screw in a direction transverse to the central longitudinal axis of the screw.

43. The bone plate system of claim 41 wherein the head of each polyaxial screw has an arcuate outer periphery lateral to the central longitudinal axis of each screw, each collar has an arcuate inner surface, and the inner surface of each collar may compress around outer periphery of the head of the screw.

44. A bone plate system for securing a plurality of bones in a desired alignment comprising:

a plate including a plurality of bores at least generally vertically arrayed;

a bone screw within each bore, each screw including a shank, a head disposable within each bore, and a central longitudinal axis; and

a screw lock for at least one bone screw wherein the bone screw lock may be rotated in a plane between an open position allowing a bone screw to be inserted within the screw lock and a closed position preventing movement of the bone screw therein relative to the screw lock.

45. The plate system of claim 44 wherein the plate includes bores generally horizontally arrayed.

46. The plate system of claim 44 wherein the plate includes a pair of horizontal bores for each vertebral segment to which the plate is secured.

47. The plate system of claim 44 wherein at least one bore including a bone screw and a screw lock is dynamized to permit bone screws secured to a bone to compress in a generally vertical direction.

48. The plate system of claim 47 wherein the plate includes a pair of horizontally arrayed bores for each vertebral segment to which the plate is secured and the pair of bores includes a bone screw and a screw lock are configured to permit bone screws secured to a bone to compress in a generally vertical direction.

49. The plate system of claim 44 wherein the screws may be polyaxially secured within the screw lock.

50. The plate system of claim 44 wherein each screw lock has an arcuate interior surface for mating with a screw head of a screw disposed therein.

51. The plate system of claim 50 wherein the screw head of the screw disposed within the screw lock has an arcuate outer surface for mating with the interior surface of the screw lock.

52. The plate system of claim 44 wherein each screw lock has a non-uniform exterior surface contacting an interior surface of each bore such that the screw lock has a portion with a first outer dimension and a portion with a second outer dimension smaller than the first outer dimension.

53. The plate system of claim 52 wherein each screw lock has cam surfaces between the portion with the first outer dimension and the portion with the second outer dimension.

54. The plate system of claim 53 wherein each screw lock is rotated in a plane such that the cam surfaces cam against the interior surface of its respective bore to compress the screw lock.

55. The plate system of claim 54 wherein the screw lock is generally a c-ring including a pair of arms with an opening between terminal ends of each arm.

56. The plate system of claim 55 wherein rotation of the screw lock compresses the screw lock and decreases the opening between the ends of each arm.

57. The plate system of claim 54 wherein the interior surface of the bore has cam surfaces that mate against the cam surfaces of the screw lock.

58. The plate system of claim 44 wherein each screw lock is received in a bore including a stop defining the extent of planar rotation of the screw lock.

59. A bone plate system for securing a plurality of bone structures comprising:

a plurality of bone screws securable in bone structures; and

a plate defining bores for receiving bone screws, at least one bore holding a screw received therein in a stationary position relative to the plate, and at least second and third bores permitting screws received therein to move towards the stationary screw and towards each other.

60. The bone plate system of claim 59 wherein the screws located in the second and third bores move in opposite directions relative to the stationary bore.

61. The bone plate system of claim 59 wherein the stationary screw has a complementary stationary screw proximally located to the stationary screw such that the second and third bores permit movement of bone screws received therein towards the stationary screw and the complementary screw.

62. The bone plate system of claim 59 wherein the second bore has a complementary bore proximally located such that the complementary bore permits movement of a bone screw received therein towards the stationary screw and the screw received in the third bore.